



ILLIANA INSTRUMENTATION

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CERTIFICATE OF CALIBRATION

CUSTOMER:

Iliana Instrumentation Service
1831 Govert Drive
Schererville, IN 46375

MISCELLANEOUS DETAILS:

Date Received 4/13/19
Certification Date: 4/13/19
Recalibration Date: 7/12/19
Cal. Number: 1228-041319
P.O. Number:
Location of Calibration: Lab
Detailed Results Attached: YES
Procedure Used: Fluke Procedure

EQUIPMENT CALIBRATED

MANUFACTURER: Fluke
MODEL: 744
SERIAL NUMBER: 7607012
ITEM NUMBER: 1228
DESCRIPTION: Calibrator
CONDITION AS FOUND: In tolerance

STANDARDS USED

Item 1546 Fluke 525B; Item 1205 HP34401A

TEST CONDITIONS

TEMPERATURE 75 Deg F.
HUMIDITY 37% rH

CERTIFIED BY: Paul Krolla TITLE: ISA CCST III DATE 4/13/19

APPROVED BY: Laura Mabe TITLE: Deputy Quality Mgr. DATE 4/13/19

This certifies that the above equipment was calibrated using appropriate Iliana Instrumentation technical procedures. At planned intervals, Iliana Instrumentation standards are calibrated by comparison to or measurement against standards which are traceable to the SI units through the NIST or other recognized national measurement institutes or international standard bodies. The results in this report relate only to the item(s) calibrated. If so indicated above, detailed calibration results are attached to this certificate. These results are part of this certificate and this certificate shall not be reproduced except in full, without the written approval of Iliana Instrumentation. Any number of factors not under the control of the calibration laboratory may cause the calibration of the above item(s) to drift before the recommended recalibration date. Supporting documentation relative to traceability and technical procedures used is on file and is available for examination upon request and approval of our quality assurance manager. The above uncertainties represent an expanded uncertainty expressed at approximately 95% confidence level using a coverage factor of k=2.

Item calibrated	Item 1228 Fluke model 744									
Accuracy	Varies By Range, see upper and lower tolerance for details									
Standard used	1546 and 1205									
Cal Date	04/13/19									
Intentional Offset at Found	None									
Intentional Offset at Left	None									
Limitations	None									
Input range	Eng. Units	Cal Pt	Upper	lower	Initial	Final	Sensitivity	STD	Unc.	
							Check			
Measure K	C	-180	-179.4	-180.6	-180.1	-180.1	OK	1546	0.19	
Measure K	C	0	0.5	-0.5	-0.1	-0.1	OK	1546	0.19	
Measure K	C	400	400.6	399.4	399.9	399.9	OK	1546	0.19	
Measure K	C	800	800.7	799.3	799.9	799.9	OK	1546	0.19	
Measure K	C	1000	1001	999	999.9	999.9	OK	1546	0.19	
Measure K	C	1300	1300.9	1299.1	1299.9	1299.9	OK	1546	0.19	
Simulate K	C	-180	-179.4	-180.6	-179.8	-179.8	OK	1546	0.16	
Simulate K	C	0	0.6	-0.6	0.1	0.1	OK	1546	0.16	
Simulate K	C	400	400.6	399.4	400.1	400.1	OK	1546	0.16	
Simulate K	C	800	800.8	799.2	800.1	800.1	OK	1546	0.16	
Simulate K	C	1000	1001	999	1000.1	1000.1	OK	1546	0.16	
Simulate K	C	1300	1301.3	1298.7	1300.1	1300.1	OK	1546	0.16	
Measure J	C	-210	-209.4	-210.6	-210.2	-210.2	OK	1546	0.17	
Measure J	C	0	0.6	-0.6	-0.3	-0.3	OK	1546	0.17	
Measure J	C	300	300.6	299.4	299.7	299.7	OK	1546	0.17	
Measure J	C	600	600.6	599.4	599.7	599.7	OK	1546	0.17	
Measure J	C	900	900.9	899.1	899.7	899.7	OK	1546	0.17	
Measure J	C	1200	1201.2	1198.8	1199.7	1199.7	OK	1546	0.17	
Simulate J	C	-210	-209.4	-210.6	-209.6	-209.6	OK	1546	0.13	
Simulate J	C	0	0.6	-0.6	0.1	0.1	OK	1546	0.13	
Simulate J	C	300	300.6	299.4	300.1	300.1	OK	1546	0.13	
Simulate J	C	600	600.6	599.4	600.1	600.1	OK	1546	0.13	
Simulate J	C	900	900.9	899.1	900.1	900.1	OK	1546	0.13	
Simulate J	C	1200	1201.2	1198.8	1200.1	1200.1	OK	1546	0.13	
Measure S	C	0	0.6	-0.6	0.1	0.1	OK	1546	0.67	
Measure S	C	400	400.6	399.4	399.7	399.7	OK	1546	0.58	
Measure S	C	800	800.8	799.2	799.7	799.7	OK	1546	0.58	
Measure S	C	1200	1201.2	1198.8	1199.9	1199.9	OK	1546	0.58	
Measure S	C	1600	1601.6	1598.4	1599.7	1599.7	OK	1546	0.58	
Measure S	C	1767	1768.8	1765.2	1766.5	1766.5	OK	1546	0.58	
Simulate S	C	0	0.6	-0.6	0.2	0.2	OK	1546	0.66	
Simulate S	C	400	400.6	399.4	400.1	400.1	OK	1546	0.55	
Simulate S	C	800	800.8	799.2	800.1	800.1	OK	1546	0.55	
Simulate S	C	1200	1201	1198.8	1200.1	1200.1	OK	1546	0.55	
Simulate S	C	1600	1601.6	1598.4	1600.1	1600.1	OK	1546	0.55	
Simulate S	C	1767	1768.8	1765.2	1767.1	1767.1	OK	1546	0.55	
Measure N	C	-100	-99.4	-100.6	-100.3	-100.3	OK	1546	0.2	
Measure N	C	0	0.6	-0.6	-0.3	-0.3	OK	1546	0.2	
Measure N	C	300	300.6	299.4	299.7	299.7	OK	1546	0.2	
Measure N	C	600	600.6	599.4	599.7	599.7	OK	1546	0.2	
Measure N	C	900	900.9	899.1	899.7	899.7	OK	1546	0.2	
Measure N	C	1300	1301.3	1298.7	1299.7	1299.7	OK	1546	0.2	
Source N	C	-100	-99.4	-100.6	-99.5	-99.5	OK	1546	0.18	
Source N	C	0	0.6	-0.6	0.3	0.3	OK	1546	0.18	
Source N	C	300	300.6	299.4	300.3	300.3	OK	1546	0.18	
Source N	C	600	600.6	599.4	600.2	600.2	OK	1546	0.18	

Input range	Eng. Units	Cal Pt	Upper	lower	Initial	Final	Sensitivity	STD	Unc.
							Check		
Source N	C	900	900.9	899.1	900.3	900.3	OK	1546	0.18
Source N	C	1300	1301.3	1298.7	1300.3	1300.3	OK	1546	0.18
Measure T	C	-200	-199.4	-200.6	-199.6	-199.6	OK	1546	0.74
Measure T	C	0	0.6	-0.6	0.2	0.2	OK	1546	0.73
Measure T	C	100	100.6	99.4	100.1	100.1	OK	1546	0.73
Measure T	C	200	200.6	199.4	200.1	200.1	OK	1546	0.73
Measure T	C	300	300.6	299.4	300.1	300.1	OK	1546	0.73
Measure T	C	400	400.6	399.6	400	400	OK	1546	0.73
Source T	C	-200	-199.4	-200.6	-200.1	-200.1	OK	1546	0.73
Source T	C	0	0.6	-0.6	-0.1	-0.1	OK	1546	0.33
Source T	C	100	100.6	99.4	99.9	99.9	OK	1546	0.33
Source T	C	200	200.6	199.4	199.9	199.9	OK	1546	0.33
Source T	C	300	300.6	299.4	299.9	299.9	OK	1546	0.33
Source T	C	400	400.6	399.6	400	400	OK	1546	0.33
Meas mVDC 0n 110 mv range	mVDC	0	0.017	-0.017	0	0	OK	1546	0.0033
		100	100.042	99.959	100.016	100.016	OK	1546	0.0033
		-100	-99.959	-100.042	-100.012	-100.012	OK	1546	0.0033
Meas VDC on 1.1 VDC range	VDC	0	0.00006	-0.00006	0	0	OK	1546	0.000033
		1	1.00031	0.9997	1.00008	1.00008	OK	1546	0.00045
Meas VDC on 11 VDC range	VDC	0	0.0006	-0.0006	0	0	OK	1546	0.000033
		10	10.0031	9.997	10.0007	10.0007	OK	1546	0.005
Meas mADC 30 mA range	mADC	4	4.0037	3.9963	3.999	3.999	OK	1546	0.0016
		20	20.0053	19.9947	19.997	19.997	OK	1546	0.0016
Resistance Measure 11 Ohm Range	Ohms	0	0.05	-0.05	0.02	0.02	OK	1546	0.042
11 ohm range	Ohms	10	10.055	9.945	10.02	10.02	OK	1546	0.025
110 Ohm range	Ohms	0	0.05	-0.05	0	0	OK	1546	0.042
110 Ohm range	Ohms	100	100.1	99.9	100.03	100.03	OK	1546	0.025
1100 Ohm range	Ohms	0	0.5	-0.5	0	0	OK	1546	0.042
1100 Ohm range	Ohms	1000	1001	999	1000	1000	OK	1546	0.34
Source mVDC	mVDC	100	100.0155	99.9845	100.01	100.01	OK	1205	0.01
	mVDC	120	120.067	119.933	120	120	OK	1205	0.062
		1000	1000.155	999.845	1000.06	1000.06	OK	1205	0.53
		14000	14002.15	13997.85	13999	13999	OK	1205	5.8
Source mADC	mADC	2	2.0035	1.9965	2.0003	2.0003	OK	1205	0.01
		4	4.0037	3.9963	4.0007	4.0007	OK	1205	0.01
		22	22.0055	21.9945	22.004	22.004	OK	1205	0.012
Resistanace source 11 Ohm range	Ohms	0.1	0.12	0.08	0.101	0.101	OK	1546	0.02
11 Ohm range	Ohms	1	1.0201	0.9799	1	1	OK	1546	0.02
11 ohm range	Ohms	10	10.021	9.979	10.001	10.001	OK	1546	0.02
110 ohm range	Ohms	20	20.042	19.958	20.001	20.001	OK	1546	0.02
110 ohm range	Ohms	100	100.05	99.95	99.997	99.997	OK	1546	0.02
1100 ohm range	Ohms	200	200.54	199.46	199.96	199.96	OK	1546	0.11
1100 ohm range	Ohms	1000	1000.7	999.3	999.9	999.9	OK	1546	0.11
11 kohm range	kohms	2	2.0056	1.9944	1.9998	1.9998	OK	1546	1.1
RTD meas. plt 100 (385) (27.096 Ohms)	Deg C	-180	-179.7	-180.3	-180.1	-180.1	OK	1546	0.63
4 wire 138.505 Ohms		100	100.5	99.5	100	100	OK	1546	0.049
RTD source plt 100 (385) 138.505 ohms at 100 degrees C	Deg C	100	100.5	99.5	99.996	99.996	OK	1546	0.049